

US EPA ARCHIVE DOCUMENT

EFB/25

MRID 147862  
or 460089-003

## DATA EVALUATION RECORD

1. **CHEMICAL:** Triadimefon  
Shaughnessey No.: 109901
2. **TEST MATERIAL:** Triadimefon; Batch No. 816155201; 92.6%  
active ingredient (Triadimefon).
3. **STUDY TYPE:** Freshwater Invertebrate Static Acute Toxicity  
Test. Species Tested: Water Flea (Daphnia magna)
4. **CITATION:** Heimbach, F. 1983. Acute Toxicity of  
Triadimefon to Water Fleas. Report Hb/Dm 6, Test Dm 38/83,  
Mobay AgChem No. 84017, Prepared by Bayer AG, Institute of  
Environmental Biology, West Germany. Submitted by Mobay  
Chemical Corporation, Stilwell, KS. EPA MRID No. 147862.  
or 460089-003
5. **REVIEWED BY:**  
  
Dennis J. McLane, Wildlife Biologist      Signature: *Dennis J. McLane*  
Section 1, Ecological Effects Branch  
Environmental Fate and Effects Division Date: 4-6-93
6. **APPROVED BY:**  
  
Les Touart, Section Chief      Signature: *LT*  
Ecological Effects Branch  
Environmental Fate and Effects Division Date: 4-15-93
7. **CONCLUSIONS:** This study is scientifically sound and does  
not meet the requirements for an acute static toxicity test  
for freshwater invertebrates. Based on nominal  
concentrations, the 48-hour EC<sub>50</sub> was >10 mg/L. Therefore,  
triadimefon is classified as slightly toxic to Daphnia  
magna.
8. **RECOMMENDATIONS:** Repeat the study with testing at higher  
level.
9. **BACKGROUND:**
10. **DISCUSSION OF INDIVIDUAL TESTS:** N/A
11. **MATERIALS AND METHODS:**  
  
A. **Test Animals:** First instar, 6 to 24-hour old, water  
fleas (Daphnia magna) used in this test were obtained

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5. **REVIEWED BY:**  
 Louis M. Rifici, M.S.  
 Associate Scientist II  
 KBN Engineering and Applied Sciences, Inc.  
 Signature: *Louis M. Rifici*  
 Date: *1/23/91*
6. **APPROVED BY:**  
 Pim Kosalwat, Ph.D.  
 Senior Scientist  
 KBN Engineering and Applied Sciences, Inc.  
 Signature: *P. Kosalwat*  
 Date: *1/23/91*  
 Henry T. Craven, M.S.  
 Supervisor, EEB/HED  
 USEPA  
 Signature: *Allen W. Vaughan* 7.5.91  
 Date: *7.5.91*
7. **CONCLUSIONS:** This study is scientifically sound and meets the requirements for an acute static toxicity test for freshwater invertebrates. Based on nominal concentrations, the 48-hour  $EC_{50}$  was 11.3 mg/L. Therefore, Triadimefon is classified as slightly toxic to Daphnia magna... Caution should be exercised in regard to the  $EC_{50}$  because it lies outside of the concentration range used in the toxicity test.
8. **RECOMMENDATIONS:** N/A
9. **BACKGROUND:**

A. **Test Animals:** First instar, 6 to 24-hour old, water fleas (*Daphnia magna*) used in this test were obtained from existing laboratory cultures. The culture water was local tap water filtered through activated carbon and from which copper had been removed (the method of removal was not described). Cultures, maintained in 2-L glass containers, were renewed twice per week and held at  $20^{\circ}\pm 1^{\circ}\text{C}$  on a 16:8 hour light/dark cycle. Cultures were fed *Scenedesmus subspicatus* and yeast. The first instars were obtained by repeatedly, carefully screening out adults using plastic screens with 0.65 and 0.20 mm mesh (DIN 4195).

B. **Test System:** Aliquots of a stock solution (10 mg triadimefon in 1000 ml test water) were mixed with dilution water to give a final volume of 50 mL test solution in each 100 mL beaker. The beakers were covered with watch glasses (50 mm diameter) and placed in a growth chamber at  $20.5^{\circ}\text{C}$ .

The dilution water was prepared according to DIN 38412, L 11, using deionized water with added  $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$  (0.08 moles/L),  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$  (0.02 moles/L),  $\text{NaHCO}_3$  (0.03 moles/L), and KCl (0.003 moles/L). After aeration overnight, the solution was allowed to stand for a few hours without additional aeration.

The daphnids were not fed during the test.

C. **Dosage:** Forty-eight-hour static test. Based on a preliminary test, five nominal concentrations (1.0, 1.8, 3.2, 5.6, 10 mg/L) and a dilution water control were selected for the test.

D. **Design:** Three beakers were used for each concentration. Using a pipette, ten daphnids were carefully transferred into each beaker. After 24 and 48 hours, the containers were visually evaluated by counting the survivors. Death was determined by the lack of movement and was verified under a stereomicroscope. Oxygen saturation and pH were measured at the beginning (in the control) and end (in the control and highest concentration) of the test.

E. **Statistics:** The 48-hour median effective concentration ( $\text{EC}_{50}$ ) and associated 95% confidence interval (C.I.) were calculated using a probit analysis (SAS, 1979).

12. **REPORTED RESULTS:** The results of the preliminary test are given in Table 1 (attached). A granular precipitate was observed on the bottom of the 50 mg/L test beakers after 24 hours.

The definitive test results are in Table 2 (attached). The 48-hour  $EC_{50}$  for Triadimefon based on nominal concentrations was 11.3 mg/L (95% C.I.=9.0-19.1). Survival at all tested concentrations was greater than 50%. The slope of the dose-response curve is given as 1.85. The no-observed-effect concentration (NOEC) was not reported. No behavioral changes were observed.

Oxygen saturation and pH were reported as 101.3% and 7.91, respectively, at test start and 102% and 7.8 upon conclusion.

The water solubility of Triadimefon was listed as 70 mg/L.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:**

The author presented no conclusions.

Quality Assurance and Good Laboratory Practice Regulation Statements were not included in the report.

As a quality assurance measure, a reference toxicant test, using  $K_2Cr_2O_7$ , was performed under the conditions listed above (test concentrations: 0.75, 1.00, 1.33, 1.78, 2.37 and 3.16 mg/L). The 24-hour  $EC_{50}$  of  $K_2Cr_2O_7$  was found to be 1.57 mg/L (95% C.I.=1.22-2.05 mg/L). The author states that this value lies within the required range of 0.9 to 1.9 mg/L.

14. **REVIEWER'S DISCUSSION AND INTERPRETATION OF STUDY RESULTS:**

- A. **Test Procedure:** The test procedures were generally in accordance with protocols recommended by the guidelines, but deviated from the SEP as follows:

No hardness or alkalinity is stated for the test solutions.

The test temperature is reported as 20.5°C but it is not stated when the temperature was monitored. No raw data were included in the report to help the reviewer determine the temperature range in the test.

Pretest mortality and condition of the Daphnia magna cultures (i.e., presence of ehippia) were not reported.

First instar Daphnia magna used in tests should be from the fourth or later broods of a given parent. The author did not indicate which brood was the source of the test animals.

No acclimation period to the test water was reported.

The report did not state whether the recommended 15-30 minute transition period between light and dark was used.

- B. Statistical Analysis: The ASTM protocol requires partial mortality ("more than 63% of organisms exposed,") above the  $EC_{50}$ .
- C. Discussion/Results: The results of the preliminary test indicate the  $EC_{50}$  is less than 100 mg/L, however, the concentrations in the definitive test were not high enough to produce greater than 50% mortality in 48 hours. The resulting  $EC_{50}$  is greater than the highest concentration in the definitive test.

The 48-hour  $EC_{50}$  >10 mg/L (based on nominal concentrations) classifies triadimefon as slightly toxic to Daphnia magna.

D. Adequacy of the Study:

- (1) Classification: Supplemental
- (2) Rationale: The study failed to produce an  $EC_{50}$  or show that the  $EC_{50}$  is above 100 mg/l.
- (3) Repairability: No

15. COMPLETION OF ONE-LINER FOR STUDY: Yes, 01-16-91.

RIN 5710-93

TRIADMEFON EFB REVIEW

Page      is not included in this copy.

Pages 6 through 7 are not included.

The material not included contains the following type of information:

- ☐ Identity of product inert ingredients.
- ☐ Identity of product impurities.
- ☐ Description of the product manufacturing process.
- ☐ Description of quality control procedures.
- ☐ Identity of the source of product ingredients.
- ☐ Sales or other commercial/financial information.
- ☐ A draft product label.
- ☐ The product confidential statement of formula.
- ☐ Information about a pending registration action.
- ☒ FIFRA registration data.
- ☐ The document is a duplicate of page(s)         .
- ☐ The document is not responsive to the request.

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

LOUIS M. RIFICI BAYLETON DAPHNIA MAGNA 1-15-91

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
10	30	13	43.33333	29.23324
5.6	30	3	10	4.215167E-04
3.2	30	1	3.333334	2.8871E-06
1.8	30	0	0	9.313227E-08
1	20	0	0	9.536742E-05

THE BINOMIAL TEST SHOWS THAT 0 AND +INFINITY CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 0

THE MOVING AVERAGE METHOD CANNOT BE USED WITH THIS DATA SET BECAUSE NO SPAN WHICH PRODUCES MOVING AVERAGE ANGLES THAT BRACKET 45 DEGREES ALSO USES TWO PERCENT DEAD BETWEEN 0 AND 100 PERCENT.

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
5	.2405768	1	.9141333

SLOPE = 3.734469

95 PERCENT CONFIDENCE LIMITS = 1.902763 AND 5.566175

LC50 = 11.33192

95 PERCENT CONFIDENCE LIMITS = 8.965511 AND 19.21193

LC10 = 5.178792

95 PERCENT CONFIDENCE LIMITS = 3.421192 AND 6.402568

\*\*\*\*\*

Investigation No. 109901

Study/Species/Lab/  
Accession Chemical  
X a.i.

Chemical Name Bayleton Chemical Class \_\_\_\_\_

Page 1 of 1

(Triclorufen)

Results

Reviewer/  
Date Validation  
Status

4-Day Single Dose Oral LD<sub>50</sub>

Species \_\_\_\_\_

Ab \_\_\_\_\_

cc. \_\_\_\_\_

LD<sub>50</sub> = mg/kg ( 95% C.L. ) Contr. Mort.(X) =  
Slope = # Animals/Level = Age(Days) =  
Sex =  
14-Day Dose Level mg/kg/(X Mortality)  
( ) , ( ) , ( ) , ( ) , ( ) , ( )

Comments:

4-Day Single Dose Oral LD<sub>50</sub>

Species \_\_\_\_\_

Ab \_\_\_\_\_

cc. \_\_\_\_\_

LD<sub>50</sub> = mg/kg. ( 95% C.L. ) Contr. Mort.(X) =  
Slope = # Animals/Level = Age(Days) =  
Sex =  
14-Day Dose Level mg/kg/(X Mortality)  
( ) , ( ) , ( ) , ( ) , ( ) , ( )

Comments:

8-Day Dietary LC<sub>50</sub>

Species \_\_\_\_\_

Ab \_\_\_\_\_

cc. \_\_\_\_\_

LC<sub>50</sub> = ppm ( 95% C.L. ) Contr. Mort.(X) =  
Slope = # Animals/Level = Age(Days) =  
Sex =  
8-Day Dose Level ppm/(X Mortality)  
( ) , ( ) , ( ) , ( ) , ( ) , ( )

Comments:

8-Day Dietary LC<sub>50</sub>

Species \_\_\_\_\_

Ab \_\_\_\_\_

cc. \_\_\_\_\_

LC<sub>50</sub> = ppm ( 95% C.L. ) Contr. Mort.(X) =  
Slope = # Animals/Level = Age(Days) =  
Sex =  
8-Day Dose Level ppm/(X Mortality)  
( ) , ( ) , ( ) , ( ) , ( ) , ( )

Comments:

8-Hour LC<sub>50</sub>

Species Daphnia magna

Ab BAYER AG West Germany  
for Mobay Chemical Corp.

cc. 92.6

IRID No. 250-147862

> 10 # 95% C.L. Probit (extrapolated)  
LC<sub>50</sub> = 143 ppm ( 90-142 ) Contr. Mort.(X) = 0  
Slope = 3.1 # Animals/Level = 30 Sol. Contr. Mort.(X) = N/A  
48-Hour Dose Level ppm/(X Mortality)  
1.0 (0), 1.8 (0), 3.2 (3.3), 5.6 (10), 10.0 (43.3)  
Temperature = 20.5°C

Comments: nominal concentrations, control = 60 animals, 1.0 mg/L = 20 animals

DJH sup  
1/16/91  
3-12-93

6-Hour LC<sub>50</sub>

Species \_\_\_\_\_

Ab \_\_\_\_\_

cc. \_\_\_\_\_

LC<sub>50</sub> = PP ( 95% C.L. ) Con. Mort.(X) =  
Slope = # Animals/Level = Sol. Con. Mort.(X) =  
Temp. =  
96-Hour Dose Level pp / (X Mortality)  
( ) , ( ) , ( ) , ( ) , ( ) , ( )

Comments:

6-Hour LC<sub>50</sub>

Species \_\_\_\_\_

Ab \_\_\_\_\_

cc. \_\_\_\_\_

LC<sub>50</sub> = PP ( 95% C.L. ) Con. Mort.(X) =  
Slope = # Animals/Level = Sol. Con. Mort.(X) =  
Temp. =  
96-Hour Dose Level pp / (X Mortality)  
( ) , ( ) , ( ) , ( ) , ( ) , ( )

Comments:

9